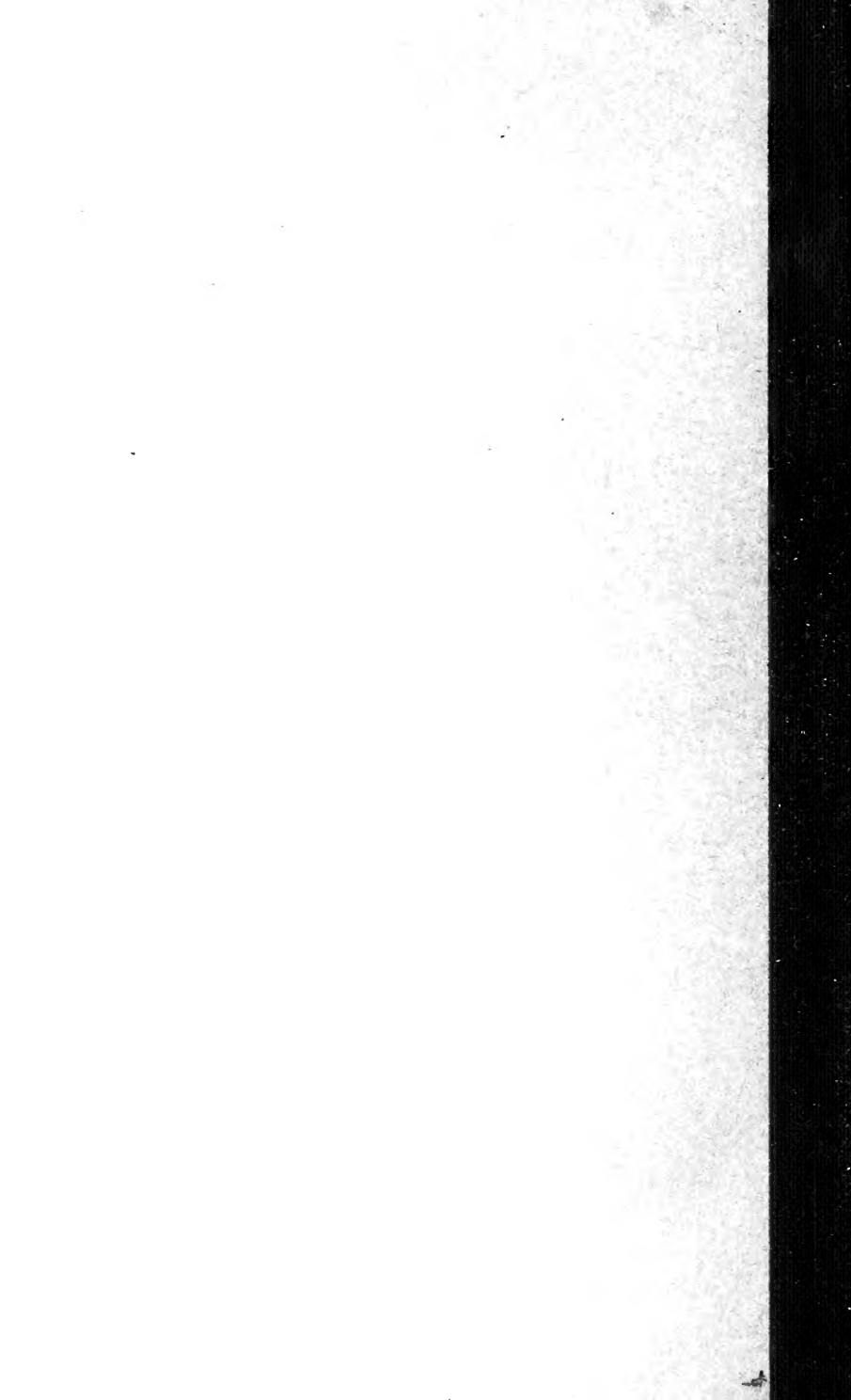


American Fisheries Society
Transactions
1876



TRANSACTIONS

OF THE

AMERICAN Fisheries
SOCIETY

(Fish Culturists' Association)

AT ITS FIFTH ANNUAL MEETING,

FEBRUARY 8TH, 1876.



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OFFICERS, 1876-7

ROBT. B. ROOSEVELT,	-	-	-	President,
				New York City.
GEO. SHEPHERD PAGE,	-	-	-	Vice-President,
				New York City.
EUGENE G. BLACKFORD,	-	-	-	Treasurer,
				New York City.
M. C. EDMUNDS,	-	-	-	Secretary,
				Weston, Vt.

EXECUTIVE COMMITTEE.

H. J. REEDER,	-	-	-	Easton, Pa.
FRED. MATHER,	-	-	-	Honeoye Falls, N. Y.
ALEX. KENT,	-	-	-	Baltimore, Md.
W. F. WHITCHER,	-	-	-	Ottawa, Canada.
SETH GREEN,	-	-	-	Rochester, N. Y.

R E P O R T .

The Fifth Annual Meeting of the American Fish Culturists' Association convened at No. 10 Warren Street, New York City, February 8th, 1876, at 10 o'clock, A. M.

The meeting was called to order by Mr. Robert B. Roosevelt of New York City, President of the Association, who in his introductory remarks spoke of the artificial propagation of Sturgeon.

The Secretary of the Society (A. S. Collins), being absent, on motion of Mr. Geo. Shepherd Page, M. C. Edmunds was elected Secretary *pro tempore*.

A letter was read from Mr. B. F. Bowles, Treasurer of the Association, in which he stated that it was impossible for him to meet with the Association, and thereupon George E. Ward was elected Treasurer *pro tempore*.

A paper was received from Seth Green on the propagation of Trout by the Commissioners of Fisheries in New York, and a communication from Dr. E. Sterling of Cleveland, Ohio, on anomalies in the propagation of Whitefish, both of which are herewith appended.

Fred. Mather gave the Association a short account of his experience in Shad culture at the South, under the auspices of the General Government, in which he complains of the want of parent fish in the rivers South to propagate from. He thought the fish, if successfully propagated, in the various Shad streams in Virginia, North Carolina, South Carolina and Georgia, would have to be transplanted from the streams in the North.

Mr. Mather further spoke of his connection with the Centennial Exhibition at Philadelphia. Having been appointed Superintendent of the Live Fish Department, he requested members of the Association to send specimens, and otherwise aid in the display of fish at the Centennial Exhibition.

On motion of B. B. Porter, a committee was appointed to make nominations of officers for the Association the year ensuing.

The President appointed as said committee, B. B. Porter of New Jersey, C. B. Evarts of Vermont, and Wm. M. Hudson of Connecticut.

Dr. Edmunds of Vermont, offered the following Resolution :

Resolved,—That application be made for a room in the Centennial Building at Philadelphia for the collection of books and pamphlets treating on American fish culture.

The resolution was adopted, and the President appointed Geo. Shepherd Page of New York, A. B. Malcomson, Jr. of New York, and John J. Miner of Brooklyn, N. Y., as committee to make application, as provided by the foregoing resolution.

On motion, it was voted that the Association adjourn to meet at 2 o'clock, P. M.

AFTERNOON SESSION.

The Association met pursuant to adjournment, and the report of the nominating committee was taken up, and on motion, adopted.

The Society then proceeded to the election of officers for the year ensuing, and the following named members were duly elected officers of the Society :

For President—ROBT. B. ROOSEVELT, New York City.

For Vice-President—GEO. SHEPHERD PAGE, New York City.

For Treasurer—EUGENE G. BLACKFORD, New York City.

For Secretary—M. C. EDMUNDS, Weston, Vt.

For Executive Committee—H. J. REEDER, FRED. MATHER, ALEX. KENT, W. F. WHITCHER, SETH GREEN.

After the election of officers, Prof. Milner of the Smithsonian Institute, Washington, D. C., entertained the Association with an account of the work accomplished by the United States Fish Commission, which was quite interesting.

H. H. Thomas offered a resolution fixing the price of Trout Eggs, which upon a vote of the Society was lost.

Mr. Eugene G. Blackford then offered a resolution for the consideration of the Society, which he prefaced with the following remarks:

I beg to call the attention of the gentlemen present to a subject of great interest. As the topics treated by the Fish Culturists' Association have augmented in number, so has the interest increased. If we have developed a scientific inquiry into the natural history of the subjects treated by the Society, the practical aims of fish culture have certainly been strengthened thereby. I am desirous of introducing before you a practical subject, one of figures, at which you must not be afraid. It is even something worse than figures, it is statistics. Now we are all of us as yet, working very much in the dark. Let us take the subject of Trout raised by our fish culturists. What do we know about the number of them produced? It is impossible that we should see clearly what we are driving at, unless we start with that which must be the foundation on which we must build. Suppose this was a live stock association, given to the raising of horses or cows. The first thing they would do, being practical people, would be to get some positive data as to production; once production noted, consumption could be readily deduced. It would be of great importance for the Association to know how many Trout were artificially produced, and sold in the various markets of the country. Starting from this point, I should be even desirous of going further. If the

Smithsonian Institute, so ably represented in our Association by Professor Baird, is laboring to account for the increase or diminishing of certain classes of sea fish in various years, this can only be arrived at, by his being fully informed as to the catch of fish on our coast. The hearsay ought to be discarded, and nothing but the positive facts cared for. If France and a portion of England give yearly statistics as to the harvests of the seas, why should we not furnish the same thing to the American public? I should think that so far as regards Trout culturists, the Fish Commissioners of the various States might, without any great trouble, furnish what would be a reliable account of the cultivated Trout sold within their jurisdictions. As to the sea fish, such an important subject, having to do with the food of the people, I do not see why facts in regard to them are not obtainable, though to secure them, the means to be employed would be more difficult. Having these ideas in view, I shall propose the following preamble and resolution :

Whereas, The Fish Culturists' Association believe that data in regard to the catch of staple fish, such as are sold in the markets of the country, would be of great importance, allowing the positive determination of questions of vast commercial and scientific importance, be it

Resolved, That the Fish Culturists' Association request the Fish Commissioners to urge on the State Governments, of which they are the representatives, the necessity of the State appointing certain officers whose duties shall be to collect such data, so that reliable information may be obtained in regard to the catch of staple fish in the various States.

It was voted that the Secretary be instructed to notify all the various State Commissioners of Fisheries of the foregoing resolution.

It was voted that all papers connected with the transactions of this Society be obtained from Mr. Collins, the former Secretary, and published in the future transactions of the Society.

A resolution was offered by Mr. Mather for the formation of a committee to consider the propriety of giving testimonials to inventors of fish hatching apparatus, and report at a future meeting of the Society, which was passed, and the President appointed as such committee Fred. Mather, J. W. Milner and B. Phillips.

Mr. Page offered the following resolution :

Resolved, That Prof. Baird be requested to obtain a place in the Exhibition Buildings at Philadelphia, for the meetings of this Society, and that the Secretary be authorized to call such meeting in connection with the meeting of the State Fish Commissioners, and that the Executive Committee be requested to invite the preparation of papers by, and the attention of prominent fish culturists from our own and foreign countries.

Which upon vote of the Society was adopted.

Mr. Edmunds offered the following resolution :

Resolved, That all breeders of fish in the United States be requested to report at the next annual meeting of this Society, their different modes of propagating fish, and the improvements they have made since beginning in the work.

Which upon a vote of the Society was adopted.

The President, Mr. Roosevelt, offered the following resolution :

Resolved, That Mr. Blackford be requested to make an examination of all fishes coming into his hands for sale in the market, thereby to more definitely find out the different periods of spawning in the various kinds of fish coming under his notice, and report at our next meeting.

On motion of Mr. Page, the Society voted to adjourn, to meet again in annual session on the second Wednesday in February, 1877.

M. C. EDMUNDS,

Secretary.

PROPAGATION OF FISH.

BY SETH GREEN.

Mr. President and Gentlemen of the American Fish Culturists' Association :—

I regret that I cannot be present at the meeting of the American Fish Culturists, but will try and make amends for my absence as well as possible. Since the last meeting, the New York State Fishery Commission have been making some addition to their hatchery at Caledonia, by leasing the Caledonia Trout Ponds of Mr. A. S. Collins. This addition is one that has been greatly needed for some time, as we have been crowded for want of room to put the young fish. Consequently we will this season distribute Brook Trout, in addition to Salmon, Salmon Trout, White Fish, Black Bass, &c.

We shall have about one million Brook Trout Fry to distribute, and the people throughout the State are taking advantage of this opportunity to restock their depleted trout streams. I am receiving orders every day, and shall commence to ship them soon after the 15th of this month. When they are deposited in the streams they should be placed in the head waters in the little rivulets a foot or two wide, that flow into the streams, and not deposited all in one place, but distributed all along the stream so that they will all get food enough, and should there chance to be enemies near, they would have a better show to get out of the way, and if it were possible to deposit them in the night, a much larger percentage would arrive at maturity, as by morning they would all be settled down and find their hiding places in the shallow water along the edges of the stream. I have no doubt but that our depleted

Brook Trout streams can be restocked again. As an incident I will cite an interesting experiment. Four years ago last summer, Mr. Charles Upton, President of the City Bank of Rochester, bought a barren trout stream which he wished to restock with Brook Trout. In the Spring of 1872, I put in 4,000 Brook Trout Fry. During the Summer it could be seen that the stream was alive with the little fellows. The next Summer Mr. Upton began fishing for them. He would drive out occasionally after banking hours, and his take would be from fifty to one hundred during the afternoon. The next season, when they were three years old, his smallest take was twenty and his largest sixty; and last season, when they were four years old, his lowest take in an afternoon was five, and his highest nineteen, many of them weighing a pound each. This I consider a perfect success.

Of Salmon Trout we shall have about 3,000,000, to distribute, and we will have enough to fill all our orders liberally. They are all hatched at present, and are doing finely. They are an excellent fish, and there are more of our little lakes suitable for this kind than any other one kind we have for distribution.

The White Fish Interests are being looked into this season to a greater extent than ever before. The Michigan Fish Commissioners made an arrangement with me last Fall to put the Holton Hatching Box in their hatching house at Detroit. As a consequence, I sent one of my assistants, Mr. Oren Chase, to Detroit, who put the boxes in, and he now has over 8,000,000 White Fish spawn nearly to the hatching point, taken by my brother, Mr. M. A. Green. When I say 8,000,000, I mean 8,000,000, and not one spawn less. The art of taking and hatching White Fish spawn is a special branch of fish culture, and a business by itself. A man may be well educated in the art of taking and hatching the spawn of other fishes, and if he

does not understand it he will make a perfect failure in hatching White Fish.

I consider this one of the greatest successes that has ever been attained in fish culture, and will say right here that in my opinion, the Holton Hatching Box, with the proper attention and care, will hatch more White Fish with less labor and better success, and with greater benefits, than any other hatching box in the world.

I believe the calculation now is to place the 8,000,000 White Fish in Lake Erie, and if this is done, in four years Lake Erie will be in a measure restocked; but the work should not stop here. The Commissioners should keep putting them in for years, and the time will come when tongue will fail to give utterance of praise. The Michigan hatching houses are not the only places where this box is being used. Mr. N. K. Fairbanks of Chicago, Ill., had a small hatching house erected near his Summer residence at Geneva Lake, Wisconsin, for the purpose of stocking Geneva Lake, and he made a contract with me to have the Holton Hatching Box placed in his hatching house. Mr. H. H. Welsher was accordingly engaged by Mr. Fairbanks to take charge of it, and he is now hatching White Fish, Salmon, Salmon Trout and Brook Trout with this same hatching box, with perfect success; in fact the full benefits to be derived from this box is still in the future.

As regards Black Bass, on account of the mildness of the Winter, we have been unable to obtain as large a supply as formerly, but we have enough however to supply the demand. They are an excellent fish, and their merits cannot be over estimated.

There has been a good deal of discussion as to the feasibility of stocking our Shad rivers with Black Bass. I have been asked my opinion a great many times. I would say that it all depends on the nature of the water and the bottom of

the stream. The Black Bass is a good kind of fish to stock a large, clear, rapid river, with stony bottom, where the crawfish and helgamite are to be found. They scarcely ever eat other fish if they can get the crawfish, and I do not recommend putting them in any waters where the crawfish is not plenty, and they are rarely found except among the stones. I would not recommend them for small ponds. If Black Bass are put in small ponds they eat the young of all kinds of fish, bite the old fish, and before starving, would eat themselves if possible. They have the bull dog disposition as far as courage is concerned, but I think they will not kill except for food. They will not be a great drawback to Shad rivers, for the reason that they live in swift running waters and there are not many Shad in the heavy currents of the rivers. If hatched in swift running water they will be carried down to comparatively still water before they are strong enough to hold their own against the current. The first four days after the young are hatched, they go down stream nearly as fast as the current runs in the river; after that time they will resist a moderate current, and are always near the middle of the river, and out of the way of their enemies, which are small fish near the shore.

Last Summer we made a success hatching Sturgeon on the Hudson River. They used to be very plenty, but like all other kinds of fish, were diminishing in number every year, and if it had not been for the discovery of hatching them artificially, they would soon become extinct, and the Albanians would not have any more Albany Beef, and that would be a great calamity! If we can make Sturgeon plenty again, and I have no doubt but that we can, it will be one of the best things we can do to make cheap food for the poor. I remember when they were sold for one cent per pound, while now they sell for ten cents, and I have no doubt that within a few years we can make them so plenty they will be as cheap as they were in old times.

Shad hatching artificially has proved a great success, as has been shown by large Shad being sold cheap in most of the cities of this state. They were sold last season for from twenty to twenty-five cents each, which is cheaper than they were ever sold anywhere, away from the river, within the memory of the oldest inhabitant.

Nearly all the rivers between Florida and the Potomac, have been so completely fished out, that there are hardly Shad enough left from which to take the spawn to stock the respective rivers, and if something is not done soon, they could not be restocked without transporting the young Shad from some other rivers. The Potomac and Rapahannock rivers have Shad enough left in them so that they could be restocked in a few years, and all the Southern rivers could be restocked from them.

In experimenting at the New York State hatching house, we have found that the California Salmon can be crossed with the Brook Trout. We have a few thousand Brook Trout spawn impregnated with the milt of the California Salmon. They have not hatched yet, but are far advanced and will hatch in a few days. They may make a good fish to stock some kinds of waters in this country. I shall make a great effort to raise them, and while they are growing will study their habits and growth and can make up my mind what kind of water, if any, they are suitable for. The experiment is a cheap one. I do not believe in expensive experiments for finding new kinds of fish, to stock the waters of this country, as we have plenty of good kinds of fish with which to do this. We should study economy. What I mean by economy is to bring about the greatest amount of work for the least money. The more money there is spent in stocking our waters with food fishes the better will it be for the country, providing it is spent by men who know the kinds of fish with which to stock the different waters in their country.

I am sorry to say that some of our sister states are so very blind and penurious, and make their appropriations so small that the Commissioners could not afford to look at their own shadows if it cost anything, and consequently they can do nothing but answer correspondents, and get turned out in a few years for not filling the waters of their respective states with fish. And a very great mistake it is to change Commissioners after they have served one or two years. By changing a Commissioner it sets the state back just as many years as the old Commissioner has served. It takes a few years for him to learn about the number of rivers, lakes and bays he has in his state, and the kinds of fish that are suitable for the different waters; and one of the important things is to know where and how to get the fish, and how to transport them. It is a trade to transport fish long journeys successfully. Nearly every man who has ever carried a few minnows in a pail to fish with, has an idea that he could transport fish a long journey. He will find himself mistaken if he undertakes it.

Yours,

SETH GREEN.

PROPAGATION OF WHITE FISH.

BY DR. E. STERLING.

CLEVELAND, February 4th, 1876..

MR. COLLINS, *Dear Sir* :—It would give me great pleasure to be present at the next meeting of the AMERICAN FISH CULTURISTS' ASSOCIATION, as requested in your letter, but circumstances will not permit. I will, however, comply with

your desire for a short article connected with fish culture ; and although I offer nothing new, perhaps it may be used to help sustain former observations.

The *State of Ohio* built this Fall, four experimental White Fish hatching houses, the attending expense to be paid out of the appropriation of \$10,000, made last Winter for this purpose. The hatchery here is located on the *Water Works Grounds*, and receives water direct from the inlet pipe which runs out into Lake Erie one mile, and which at its terminus is twenty-five feet below the surface. The first box of eggs was received from Kelley's Island, Ohio, and placed in the trays December 1st. A few on the edges of the box were frozen, and a good part of the remainder pressed badly out of shape, the result of packing. The second box of eggs, all in good condition, from Detroit River, Michigan, were placed in the trays December 15th, making 300,000 altogether in the hatchery. From this number less than 1,000 dead eggs have been removed ; three-fourths from box number one, the remainder from box number two. All the frozen eggs died. The temperature of water to date, in hatchery and Lake, has been 38° and 40° (that is temperature the same at each end of aqueduct), most of the time. 38°, Far. Last Winter, which was uncommonly severe, the water at the hatchery location stood 34° and 36°. No account of the water was taken at the Lake crib at that time, though undoubtedly it was the same in temperature, as it could undergo little if any change in a passage of a mile and a half through a brick aqueduct five feet in diameter.

The eggs at present are in fine condition, clean and equally well developed, notwithstanding the unusual muddy state of the water, a similar condition not having occurred in several years ; and from present appearances over ninety-five per cent will hatch. Between the 20th of January and the 1st of this

month, about 100 young fry made their appearance, but none since the last date. Those eggs which hatched all came from the Detroit River deposit, and none from the Kelley Island box, number one. Why this departure in progressive development should be in favor of box number two, I cannot say, but will leave it for others to explain. Certainly they were all taken from the parent fish at the same date, and have since that time been under like temperature and other local conditions.

The 1st inst., thirty hours before the cold storm of to-day, the temperature of the water fell 2° in the hatchery, that is from 40° to 38° , although out of doors the weather was mild, as it had been for several days previous, the thermometer marking 50° and 55° in the shade, with high barometer increasing to the 1st. Here we have a sudden decrease of 2° in the temperature of this water immediately preceding a storm, without any corresponding fall in the air outside. This is the third time this phenomenon has been noticed since December 1st.

Our experience so far has taught us that we cannot hatch frozen White Fish eggs; second, that fish eggs, like the human head can be pounded out of shape, return to their natural form and continue their vitality; and third, that very muddy water does not at all interfere with the perfect development of the White Fish egg, from its first stage of pregnancy to the actual birth of the young stranger when he comes forth with sac well victualed; and finally, that we believe the eggs on the spawning beds of the Lake will hatch out several weeks before the first of April this season, in case the water remains as at present, 38° Far., and that nature will have the natural food for the White Fish fry ready for the emergency.

Yours Respectfully,

E. STERLING.

TROUT CULTURE.

MUNCEY TROUT PONDS, February 4th, 1876.

Gentlemen of the American Fish Culturists' Association :

I received your postal to-day. I would like to be with you at your meeting, but pressing business will keep me away. I will however say, I am having first rate success in Trout culture. My ponds number six in all, and are one half mile in length. Most of the water is shaded by forest trees ; ponds long and narrow, and from three inches to five feet in depth. I have a large amount of Trout, and think I am not far behind any one in raising Trout for the market.

My best respects to you all.

Yours Truly,

A. B. SPROUT.

CONSTITUTION

ARTICLE I.—NAME AND OBJECTS.

The name of this society shall be "The American Fish Culturists' Association." Its objects shall be to promote the cause of Fish Culture; to gather and diffuse information bearing upon its practical success; the interchange of friendly feeling and intercourse among the members of the Association; the uniting and encouraging of the individual interests of Fish Culturists.

ARTICLE II.—MEMBERS.

Any person shall, upon a two-thirds vote of the society, and a payment of three dollars, be considered a member of the Association, after signing the Constitution. The annual dues shall be \$3.00.

ARTICLE III.—OFFICERS.

The officers of the Association shall be a President, a Vice-President, a Secretary, a Treasurer and Executive Committee of three members, and shall be elected annually by a majority of votes; vacancies occurring during the year may be filled by the President.

ARTICLE IV.—MEETINGS.

The regular meetings of the Association shall be held once a year, the time a place being decided upon at the previous meeting.

ARTICLE V.—CHANGING THE CONSTITUTION.

The Constitution of the Society may be amended, altered or repealed, by a two-thirds vote of the members present at any regular meeting.

MEMBERS OF THE

AMERICAN FISH CULTURISTS' ASSOCIATION.

•

Ambler, Andrew S., Danbury, Ct.
Anderson, A. A., Bloomsbury, N. J.
Baird, Spencer F., Washington, D. C.
Betteman, C. G., Greenville, N. J.
Blackford, E. G., New York City.
Bowles, B. F., Springfield, Mass.
Boyer, B. Frank, Reading, Pa.
Bradley, Richards, Brattleboro, Vt.
Brewer, J. D., Muncey, Pa.
Bridgman, J. D., Bellows Falls, Vt.
Burgess, Arnold, West Meriden, Ct.
Bush, John T., Niagara Falls, Canada.
Chandler, F. J., Alstead, N. H.
Chrysler, Gifford W., Kinderhook, N. Y.
Chrysler, M. H., Kinderhook, N. Y.
Clift, William, Mystic Bridge, Ct.
Colburn, Charles S., Pittsford, Vt.
Collins, A. S., Caledonia, N. Y.
Crocker, A. B., Norway, Maine.
Edmunds, M. C., Weston, Vt.
Evarts, Charles B., Windsor, Vt.
Farnham, C. H., Milton, N. Y.
Farrar, Benjamin, St. Louis, Mo.
Ferguson, T. B., Annapolis, Md.
Gill, Theodore, Washington, D. C.
Goode, G. Brown, Washington, D. C.
Green, Seth, Rochester, N. Y.

-
- Hallock, Charles, New York City.
Hessel, Rudolph, Offenburg, Germany.
Heywood. Levi, Gardner, Mass.
Holley, W P., Katonah, N. Y.
Hooper, H. H., Charleston, N. H.
Hunt, J. Daggett, Summit, N. J.
Hunt, N. W., 70 Lee Avenue, Williamsburg, L. I.
Huntington, Dr., Watertown, N. Y.
Jerome, George H., Niles, Mich.
Jewett, George, Fitchburg, Mass.
Kent, Alexander, Baltimore, Md.
Lamberton, Alexander B., Rochester, N. Y.
Ledyard, L. W., Cazenovia, N. Y.
Lees, Edward M., Westport, Ct.
Lowrey, G. P., Tarrytown, N. Y.
Maginnis, Arthur, Stanhope, Pa.
Malcomson, A. Bell, Jr., New York City.
Mann, J. F., Lewiston, Pa.
Mather, Fred, Honeoye Falls, N. Y.
Milner, James W., Washington, D. C.
Neidlinger, Phil., New York City.
Newell, W. H., San Francisco, Cal.
Page, George S. New York City.
Parker, Wilbur F., Meriden, Ct.
Paxton, E. B., Detroit, Mich.
Phillips, B., Brooklyn, N. Y.
Porter, B. B., Oakland, N. J.
Price, Rodman M., Oakland, N. J.
Redding, B. B., San Francisco, Cal.
Redding, George H., Stamford, Ct.
Reeder, H. J., Easton, Pa.
Rockwood, A. P., Salt Lake City, Utah.
Roosevel, Robert B., New York City.
Rupe, A. C., New York City.
Saltus, Nicholas, New York City.

- Shultz, Theodore, New York City.
Sprout, A. B., Muncey, Pa.
Sterling, E., Cleveland, Ohio.
Stone, Livingston, Charlestown, N. H.
Stoughton, E. W., Windsor, Vt.
Tagg, Henry, Philadelphia, Pa.
Thomas, H. H., Randolph, N. Y.
Tileston, W. M., (Forest and Stream,) New York City.
Van Cleve, Joseph, Newark, N. J.
Van Wyck, J. T., New York City.
Ward, George E., New York City.
Whitcher, W. F., Ottawa, Ontario, Canada.
Whitcomb, T. J., Springfield, Vt.
Whitin, Edward, Whitinsville, Mass.
Wilmot, Samuel, Newcastle, Ontario, Canada.
Worrall, James, Harrisburgh Pa.



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